

TRANSMITTAL OF APPEAL BRIEF (Small Entity)	Docket No. XILL-3095
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In Re Application Of: Van Erlach et al.

Application No. 09/727,718	Filing Date 11/30/2000	Examiner Smith, Ruth S.	Customer No. 5409	Group Art Unit 3737	Confirmation No. 4074
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Invention: METHOD FOR INSERTING A MICRODEVICE OR A NANODEVICE INTO A BODY FLUID STREAM

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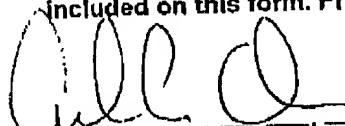
Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed on:
October 28, 2005

☒ Applicant claims small entity status. See 37 CFR 1.27

The fee for filing this Appeal Brief is: \$250.00

- ☐ A check in the amount of the fee is enclosed.
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Signature

Dated: January 26, 2006

Arlen L. Olsen
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P00SMALI/REV08

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COMBINED TRANSMITTAL OF APPEAL BRIEF TO THE BOARD OF PATENT APPEALS AND INTERFERENCES & PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. 1.136(a) (Small Entity)	Docket No. XII.L-3095
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In Re Application Of: Van Erlach et al.

Application No. 09/727,718	Filing Date 11/30/2000	Examiner Smith, Ruth S.	Customer No. 5409	Group Art Unit 3737	Confirmation No. 4074
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Invention: METHOD FOR INSERTING A MICRODEVICE OR A NANODEVICE INTO A BODY FLUID STREAM

COMMISSIONER FOR PATENTS:

This is a combined Transmittal of Appeal Brief to the Board of Patent Appeals and Interferences and petition under the provisions of 37 CFR 1.136(a) to extend the period for filing an Appeal Brief.

Applicant(s) hereby request(s) an extension of time of (check desired time period):

☒ One month ☐ Two months ☐ Three months ☐ Four months ☐ Five months

from: 12/28/2005 until: 01/28/2006
Date Date

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P34SMAL/REV04

**COMBINED TRANSMITTAL OF APPEAL BRIEF TO THE BOARD OF PATENT
APPEALS AND INTERFERENCES & PETITION FOR EXTENSION OF TIME
UNDER 37 C.F.R. 1.136(a) (Small Entity)**

Docket No.
XILL-3095

In Re Application Of: Van Erlich et al.

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
09/727,718	11/30/2000	Smith, Ruth S.	5409	3737	4074

Invention: METHOD FOR INSERTING A MICRODEVICE OR A NANODEVICE INTO A BODY FLUID STREAM

TO THE COMMISSIONER FOR PATENTS:

This combined Transmittal of Appeal Brief to the Board of Patent Appeals and Interferences and petition for extension of time under 37 CFR 1.136(a) is respectfully submitted by the undersigned:



Signature

Dated: January 26, 2006

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DOCKET NO.: XILL-3095

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Van Erlach *et al.*

Examiner: Smith, Ruth S

Serial No.: 09/727,718

Art Unit: 3737

Filed: 11/30/2000

**Title: METHOD FOR INSERTING A MICRODEVICE OR A NANODEVICE INTO A
BODY FLUID STREAM**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF OF APPELLANT

This Appeal Brief, pursuant to the Notice of Appeal filed October 28, 2005, is an appeal from the rejection of the Examiner in the final office action dated August 31, 2005.

REAL PARTY IN INTEREST

Julian Van Erlach *et al.* is the real party in interest.

RELATED APPEALS AND INTERFERENCES

None.

STATUS OF CLAIMS

Claims 1, 5, 6, 9, and 11-19 are currently pending. Claims 20-24 were previously withdrawn. Claims 1, 5, 6, 9, and 11-19 have been rejected. This Brief is in support of an appeal

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from the rejection of claims 1, 5, 6, 9, and 11-19.

STATUS OF AMENDMENTS

There are no after-final amendments.

SUMMARY OF CLAIMED SUBJECT MATTER

In one aspect, the present invention includes a method of introducing a microdevice or a nanodevice, having at least one circuit feature thereon, into at least one cell by reversible osmotic lysis, electroporation, microfine needle injection, or particle gun injection. See Specification, page 12. The cell into which the microdevice or nanodevice is introduced may include a red blood cell, a liver cell, a nerve cell, a skin cell, a bone cell, a lymph cell, an endocrine cell, a circulatory cell, and / or a muscle cell. See Specification, page 4, lines 12-15. The cell may then be introduced into a body fluid, such as blood, urine, cerebral spinal fluid, and / or lymph fluid. See Specification, page 16, lines 5-8. In some embodiments, the microdevice or nanodevice may include a diagnostic system, a transmitter, a receiver, a battery, a transistor, a capacitor, and / or a detector. The substrate for the nanodevice or microdevice may be selected from the group consisting of Gallium Arsenide, silicon, and silicon oxides. See Specification, page 5, lines 8-12. The material selected for the microdevice or nanodevice may include phosphorus, arsenic, sulfur, germanium and organic free radicals.

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The microdevice or nanodevice may then be detected by methods such as electron paramagnetic resonance (EPR), electron spin resonance (ESR) and nuclear magnetic resonance (NMR). The EPR detecting molecules may be selected from the group consisting of free radicals, odd electron molecules, transition metal complexes, lanthanide ions and triplet state molecules. See Specification, page 7, line 20 to page 8, line 9.

In a second aspect, the present invention includes a method of encapsulating a microdevice or a nanodevice, having at least one circuit feature thereon, with non immunogenic polymers. See Specification, page 15, lines 6-10. The extracellular microdevice or nanodevice may then be inserted in a blood stream within a body. The microdevice or a nanodevice may be pegylated or chemically modified with an organo hydroxyl such as poly (ethylene glycol) or methoxypoly (ethylene glycol). The organo hydroxyl chemical modification may also be used to attach a lipid anchor to the microdevice or nanodevice. See Specification, page 14, lines 17-20.

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1, 5-6, 9, and 14 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Benjamin *et al.* (U.S. 4,793,825) in view of Berg *et al.* (U.S. 5,876,989).
2. Claims 11-12 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Benjamin *et al.* (U.S. 4,793,825) in view of Berg *et al.* (U.S. 5,876,989) as applied to claim 1

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above, and further in view of Ostensen *et al.* (U.S. 6,375,931).

3. Claim 13 stands rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Benjamin *et al.* (U.S. Patent 4,793,825) in view of Berg *et al.* (U.S. 5,876,989) and Ostensen *et al.* (U.S. 6,375,931) as applied to claims 11-12 above, and further in view of Chandrakumar *et al.* (U.S. 6,472,874).

4. Claim 15 stands rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Benjamin *et al.* (U.S. 4,793,825) in view of Jacobs *et al.*

5. Claim 16 stands rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Benjamin *et al.* (U.S. 4,793,825) in view of Jacobs *et al.* as applied to claim 15 above, and further in view of Schechter *et al.* (U.S. 4,120,649).

6. Claims 17-19 stand rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Benjamin *et al.* (U.S. 4,793,825) as applied to claim 15 above, and further in view of Dustin *et al.* (U.S. 5,071,964) or Li *et al.* (U.S. 6,090,408).

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ARGUMENT

GROUND OF REJECTION 1

The Examiner rejected claims 1, 5, 6, 9, and 14 under 35 U.S.C. 103(a) as allegedly being unpatentable over Benjamin *et al.* (U.S. 4,793,825) in view of Berg *et al.* (U.S. 5,876,989).

Appellants respectfully traverse the Examiner's rejection of claim 1 as being unpatentable over Benjamin *et al.* (U.S. 4,793,825) in view of Berg *et al.* (U.S. 5,876,989) because the Examiner does not state where the cited prior art teaches or suggests a motivation to modify the primary reference, U.S. '825, by the secondary reference U.S. '989. As the Examiner's primary reference, U.S. '825 teaches *inter alia* encapsulating a device by a white cell. See U.S. '825, column 15, lines 33-34. The Examiner asserts that the modification provided by Appellants claim 1 merely involves, "the substitution of one well known type of means for introducing a substance for another." See Final Office Action, page 4, lines 28-29. Appellants emphasize that encapsulation of a foreign object by a white blood cell is due to that cell type's inherent phagocytic nature; a characteristic not common to all cell types. Appellants therefore assert that the Examiner does not teach or suggest a motivation to look to U.S. '989 to encapsulate a device by a cell type other than a white blood cell, or to introduce a device by encapsulation, because U.S. '989 only teaches "introducing molecules into the cytosol of living cells using means other than encapsulation." Berg *et al.*, column 1, lines 8-20. For the reasons provided above, Appellants respectfully submit that a person skilled in the art would not look to Berg *et al.* to practice the encapsulating method of Benjamin *et al.*

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Based on the preceding arguments, Appellants respectfully maintain that claim 1 is not unpatentable over Benjamin *et al.* (U.S. 4,793,825) in view of Berg *et al.* (U.S. 5,876,989), and that claim 1 is in condition for allowance. Since claims 5, 6, 9, and 14 depend from claim 1, Appellants contend that claims 5, 6, 9, and 14 are likewise in condition for allowance.

Claims 11-12 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Benjamin *et al.* (U.S. 4,793,825) in view of Berg *et al.* (U.S. 5,876,989) as applied to claim 1 above, and further in view of Ostensen *et al.* (U.S. 6,375,931). Since claims 11-12 depend from claim 1, Appellants contend that claims 11-12 are likewise in condition for allowance.

Claim 13 stands rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Benjamin *et al.* (U.S. 4,793,825) in view of Berg *et al.* (U.S. 5,876,989) and Ostensen *et al.* (U.S. 6,375,931) as applied to claims 11-12 above, and further in view of Chandrakumar *et al.* (U.S. 6,472,874). Since claim 13 depends from claim 1, Appellants contend that claim 13 is likewise in condition for allowance.

GROUND OF REJECTION 2

Claim 15 stands rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Benjamin *et al.* (U.S. 4,793,825) in view of Jacobs *et al.*

Appellants respectfully traverse the Examiner's rejection of claim 15 as allegedly being unpatentable over Benjamin *et al.* (U.S. 4,793,825) in view of Jacobs *et al.* because the Examiner does not state where the cited prior art teaches or suggests a motivation to modify the primary

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reference, U.S. '825, by the secondary reference, Jacobs *et al.* Unlike claim 15 which discloses, "encapsulating at least one of said microdevice and said nanodevice **with non immunogenic polymers**, wherein the at least one of said microdevice and said nanodevice is extracellular", U.S. '825 merely teaches "coating with an antibody," which is not a non immunogenic polymer. See U.S. '825 Abstract. The Examiner asserts that, "It is well known in the art to use non-immunogenic polymers to enhance retention of implanted devices by inhibiting immune recognition thereof. An example of which is seen in Jacobs *et al.*" See Final Office Action, page 3, lines 25-27. Appellants respectfully submit that the Examiner does not teach or suggest the motivation by which a person skilled in the art would modify the coating of a device with antibody as in U.S. '825 by Jacobs *et al.*

Based on the preceding arguments, Appellants respectfully maintain that claim 15 is not unpatentable over Benjamin *et al.* (U.S. 4,793,825) in view of Jacobs *et al.*, and that claim 15 is in condition for allowance.

Claim 16 stands rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Benjamin *et al.* (U.S. 4,793,825) in view of Jacobs *et al.* as applied to claim 15 above, and further in view of Schechter *et al.* (U.S. 4,120,649). Since claim 16 depends from claim 15, Appellants contend that claim 16 is likewise in condition for allowance.

Claims 17-19 stand rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Benjamin *et al.* (U.S. 4,793,825) as applied to claim 15 above, and further in view of Dustin *et al.* (U.S. 5,071,964) or Li *et al.* (U.S. 6,090,408). Since claims 17-19 depend from claim 15,

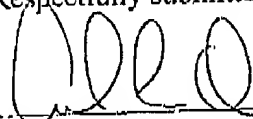
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Appellants contend that claims 17-19 are likewise in condition for allowance

SUMMARY

In summary, Appellants respectfully request reversal of the August 31, 2005 Office Action rejection of claims 1, 5, 6, 9, and 11-19.

Respectfully submitted,



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Dated: 01/26/2006

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09/727,718

DOCKET NO.:XILL-3095

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Van Erlich *et al.*

Serial No.: 09/727,718

Filed: 11/30/2000

Examiner: Smith, Ruth S

Art Unit: 3737

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Title: **METHOD FOR INSERTING A MICRODEVICE OR NANODEVICE INTO A
BODY FLUID STREAM**

Commissioner for Patents
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APPENDIX A - CLAIMS ON APPEAL

1. A method comprising:

providing at least one of a microdevice and a nanodevice, having at least one circuit feature thereon;

introducing by a method selected from the group consisting of reversible osmotic lysis, electroporation, microfine needle injection, and particle gun injection at least one of said microdevice and said nanodevice into at least one cell, wherein said cell is selected from the group consisting of a red blood cell, a liver cell, a nerve cell, a skin cell, a bone cell, a lymph cell, an endocrine cell, a circulatory cell, and a muscle cell.

5. The method of claim 1, further comprising the step of introducing said at least one cell having said microdevice and nanodevice into a body fluid, wherein said body fluid is selected from the group consisting of a blood, a urine, a cerebral spinal fluid, and a lymph fluid.

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6. The method of claim 1, wherein the step of providing at least one of said microdevice and said nanodevice further comprises providing at least one of said nanodevice and said microdevice selected from the group consisting of a diagnostic system, a transmitter, a receiver, a battery, a transistor, a capacitor, and a detector.
9. The method of claim 1, further comprising a step of selecting a substrate for at least one of said nanodevice and said microdevice from the group consisting of Gallium Arsenide, silicon, and silicon oxides.
11. The method of claim 1, wherein the step of providing at least one of said microdevice and said nanodevice, further comprises providing at least one of said nanodevice and said microdevice of a resonance type nanodevice.
12. The method of claim 1, further comprising detecting at least one of said nanodevice and said microdevice by one of electron paramagnetic resonance (EPR), electron spin resonance (ESR) and nuclear magnetic resonance (NMR).
13. The method of claim 12, wherein the step of detecting further comprises EPR detecting molecules selected from the group consisting of free radicals, odd electron molecules, transition metal complexes, lanthanide ions and triplet state molecules.

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14. The method of claim 1, further comprising a step of selecting a material for at least one of said nanodevice and said microdevice from the group consisting of phosphorus, arsenic, sulfur, germanium and organic free radicals.

15. A method comprising:

providing at least one of a nanodevice and a microdevice, having at least one circuit feature thereon;

encapsulating at least one of said microdevice and said nanodevice with non immunogenic polymers, wherein the at least one of said microdevice and said nanodevice is extracellular; and

inserting the at least one of said nanodevice and said microdevice in a blood stream within a body.

16. The method of claim 15, further comprising a step of pegylating the at least one of said nanodevice and said microdevice.

17. The method of claim 15, further comprising a step of chemically modifying the at least one of said nanodevice and said microdevice with an organo hydroxyl.

18. The method of claim 17, further comprising the step of chemically modifying includes selecting said organo hydroxyl group from the group consisting of poly (ethylene glycol), methoxypoly (ethylene glycol).

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19. The method of claim 15, wherein the step of encapsulating further comprising attaching a lipid anchor to at least one of said nanodevice and said microdevice with an organo hydroxyl.

Serial No.: 09/727,718

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DOCKET NO.: XILL-3095

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Van Erlach *et al.*

Serial No.: 09/727,718

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Title: METHOD FOR INSERTING A MICRODEVICE OR A NANODEVICE INTO A BODY FLUID STREAM

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPENDIX C - RELATED PROCEEDINGS

There are no proceedings identified in the "Related Appeals and Interferences" section.

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